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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: MITSUTOSHI ABE ET AL

Serial No.: To Be Assigned Group Art Unit: To Be Assigned

Filed: February 28, 2002 Examiner: To Be Assigned

Title: ELECTRICAL EQUIPMENT FOR MOUNTING ON VEHICLES,
ELECTRICAL MACHINES, AND MANUFACTURING
METHODS OF THE SAME

PRELIMINARY AMENDMENT

Box Non-Fee Amendment
Commissioner for Patents
Washington, D.C. 20231

Sir:

Please enter the following amendments to the specification, claims and abstract prior to the examination of the application.

IN THE CLAIMS:

Please AMEND Claims 5-12, 14, 16-17 and 21-22 as follows:

5. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

said metal plated layer is made of any one of Zn and Zn alloys, Ni and Ni alloys, and Sn and Sn alloys.

6. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

said organic resin coating is made of any one of epoxy resin, phenol resin, acrylic resin, polyester resin, styrene resin, polyethylene resin, and polyurethane resin.

7. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

degreasing, a phosphoric acid treatment, and a cleaning treatment are performed prior to coating with any of said metal plated layer and said alkali zinc plated layer.

8. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

a ultrasonic cleaning treatment and a diluted sulfuric acid treatment are performed sequentially after coating with any of said metal plated layer and said alkali zinc plated layer, prior to any of said chromate treatment and said phosphoric acid treatment.

9. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

the additive amount of chromium by the chromate treatment is desirably in the range of 10-100 mg/m².

10. (AMENDED) An electric equipment for mounting on vehicles as claimed in claim 1; wherein

the additive amount of paint by the organic coating is in the range of 50-200 mg/m².

11. (AMENDED) A rotary electric machines comprising:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in claim 1.

12. (AMENDED) An electromagnetic switch comprising:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in claim 1.

14. (AMENDED) A rotary electric machine as claimed in claim 11, wherein

said yoke is made of mild steel composed of C equal to or less than 0.12%, Si equal to or less than 0.35, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

16. (AMENDED) An electromagnetic switch as claimed in claim 12, wherein

said yoke is made of mild steel composed of C equal to or less than 0.10%, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

17. (AMENDED) A starter for internal combustion engine composed of:
a rotary electric machine a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,
a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and
a rotor, wherein

said yoke is composed of the electrical equipment for mounting on vehicles, and any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with a metal plated layer, chromate film, and organic resin coating; and

an electromagnetic switch as claimed in claim 12.

21. (AMENDED) A manufacturing method of rotary electric machine: said rotary electric machine comprises:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 18.

22. (AMENDED) A manufacturing method of electromagnetic switch: said electromagnetic switch comprises:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 18.

(A copy of the marked-up version of amended Claims 5-12, 14, 16-17 and 21-22 are attached to this Preliminary Amendment).

Please ADD new claims 24-35 as follows:

24. (NEW) An electric equipment for mounting on vehicles as claimed in claim 3; wherein

said metal plated layer is made of any one of Zn and Zn alloys, Ni and Ni alloys, and Sn and Sn alloys.

25. (NEW) An electric equipment for mounting on vehicles as claimed in claim 3; wherein

said organic resin coating is made of any one of epoxy resin, phenol resin, acrylic resin, polyester resin, styrene resin, polyethylene resin, and polyurethane resin.

26. (NEW) An electric equipment for mounting on vehicles as claimed in claim 3; wherein

degreasing, a phosphoric acid treatment, and a cleaning treatment are performed prior to coating with any of said metal plated layer and said alkali zinc plated layer.

27. (NEW) An electric equipment for mounting on vehicles as claimed in claim 3; wherein

a ultrasonic cleaning treatment and a diluted sulfuric acid treatment are performed sequentially after coating with any of said metal plated layer and said alkali zinc plated layer, prior to any of said chromate treatment and said phosphoric acid treatment.

28. (NEW) An electric equipment for mounting on vehicles as claimed in claim 2; wherein

the additive amount of chromium by the chromate treatment is desirably in the range of 10-100 mg/m².

29. (NEW) An electric equipment for mounting on vehicles as claimed in claim 3; wherein

the additive amount of paint by the organic coating is in the range of 50-200 mg/m².

30. (NEW) A rotary electric machine as claimed in claim 19, wherein said yoke is made of mild steel composed of C equal to or less than 0.12%, Si equal to or less than 0.35, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

31. (NEW) An electromagnetic switch as claimed in claim 20, wherein said yoke is made of mild steel composed of C equal to or less than 0.10%, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

32. (NEW) A manufacturing method of rotary electric machine: said rotary electric machine comprises:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 20.

33. (NEW) A manufacturing method of rotary electric machine: said rotary electric machine comprises:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 20.

34. (NEW) A manufacturing method of electromagnetic switch: said electromagnetic switch comprises:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 19.

35. (NEW) A manufacturing method of electromagnetic switch: said electromagnetic switch comprises:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in claim 20.

REMARKS

Entry of the amendments to the specification, claims and abstract before examination of the application is respectfully requested. These claims have been amended to remove multiple dependencies/These claims patentably define over the art of record.

If there are any questions regarding this Preliminary Amendment or this application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

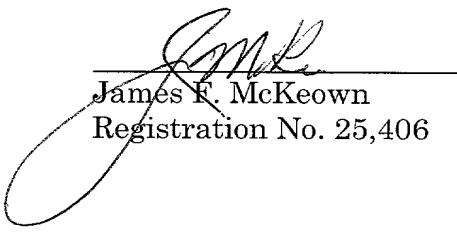
It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time sufficient to effect a timely response and shortages in other fees, be charged, or any overpayment in

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fees be credited, to the Account of Crowell & Moring, L.L.P., Deposit Account No. 05-1323 (Docket No. 381NP/50961).

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please AMEND Claims 5-12, 14, 16-17 and 21-22 as follows:

5. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any of] claim[s] 1 [and 3]; wherein
said metal plated layer is made of any one of Zn and Zn alloys, Ni and Ni alloys, and Sn and Sn alloys.

6. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any one of] claim[s] 1[, 3, and 5]; wherein
said organic resin coating is made of any one of epoxy resin, phenol resin, acrylic resin, polyester resin, styrene resin, polyethylene resin, and polyurethane resin.

7. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any one of] claim[s] 1 [to 6]; wherein
degreasing, a phosphoric acid treatment, and a cleaning treatment are performed prior to coating with any of said metal plated layer and said alkali zinc plated layer.

8. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any one of] claim[s] 1 [to 7]; wherein

a ultrasonic cleaning treatment and a diluted sulfuric acid treatment are performed sequentially after coating with any of said metal plated layer and said alkali zinc plated layer, prior to any of said chromate treatment and said phosphoric acid treatment.

9. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any one of] claim[s] 1[, 2, 5 to 8]; wherein

the additive amount of chromium by the chromate treatment is desirably in the range of 10-100 mg/m².

10. (AMENDED) An electric equipment for mounting on vehicles as claimed in [any one of] claim[s] 1 [to 10]; wherein

the additive amount of paint by the organic coating is in the range of 50-200 mg/m².

11. (AMENDED) A rotary electric machines comprising:
a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and
a rotor, wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in [any one of] claim[s] 1 [to 10].

12. (AMENDED) An electromagnetic switch comprising:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in [any one of] claim[s] 1 [to 10].

14. (AMENDED) A rotary electric machine as claimed in [any of] claim[s] 11 [and 13], wherein

said yoke is made of mild steel composed of C equal to or less than 0.12%, Si equal to or less than 0.35, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

16. (AMENDED) An electromagnetic switch as claimed in [any of] claim[s] 12 [and 15], wherein

said yoke is made of mild steel composed of C equal to or less than 0.10%, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

17. (AMENDED) A starter for internal combustion engine composed of: the rotary electric machine as claimed in [any one of] claim[s] 11[, 13, and 14]; and

the electromagnetic switch as claimed in [any one of] claim[s] 12[, 15, and 16].

21. (AMENDED) A manufacturing method of rotary electric machine: said rotary electric machine comprises:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in [any one of] claim[s] 18 [to 20].

22. (AMENDED) A manufacturing method of electromagnetic switch: said electromagnetic switch comprises:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in [any one of] claim[s] 18 [to 20].